

IN THE CLAIMS:

1. (previously presented) A mechanical shock producing device for testing a sample specimen comprising:

a beam having a predetermined length and a first end and a second end, at least one of said first beam end and said second beam end having a substantially rigidly fixed position, with the specimen mounted on said beam at a position separated by a distance from the fixed position; and

a shock column positioned to apply a force to said beam, the force causing said beam to bend in a direction transverse to the length, said column comprising a buckling failure formed therein, said buckling failure configured to cause said column to buckle when a specific force is applied to said beam through said column.

2. (previously presented) A mechanical shock-producing device according to Claim 1 wherein said column comprises:

a top cap;

a bottom cap; and

a column portion extending between said top cap and said bottom cap, said column portion comprising said buckling failure.

3. (previously presented) A mechanical shock-producing device according to Claim 2 wherein said top cap, said bottom cap, and said column portion comprise threaded end portions, said top cap and said bottom cap configured to thread onto the threaded portion of said column portion.

4. (previously presented) A mechanical shock-producing device according to Claim 2 wherein said top cap and said bottom cap comprise deformable ridges within a recess therein, said deformable ridges utilized in press fitting said top cap and said bottom cap to said column portion.

5. (previously presented) A mechanical shock-producing device according to Claim 2 wherein said buckling failure comprises a notch formed near a center of the length of said column portion, said notch sized to cause said column portion to fail when a specific force is applied through said column portion.

6. (previously presented) A mechanical shock-producing device according to Claim 2 wherein said buckling failure comprises a reduced cross-section formed near a center of the length of said column portion, said reduced cross-section sized to cause said column portion to fail when a specific force is applied through said column portion.

7. (previously presented) A mechanical shock-producing device according to Claim 2 wherein said column portion comprises:

end portions; and

an enlarged cross-section extending between said end portions, said end portions and said enlarged cross-section forming notches where said end portions extend into said top cap and said bottom cap, said enlarged cross-section sized to cause said column portion to fail when a specific force is applied through said column portion.

8. (previously presented) A mechanical shock-producing device according to Claim 2 wherein said column portion comprises a ceramic material.

9. (previously presented) A mechanical shock-producing device according to Claim 2 wherein said beam comprises at least one of aluminum and titanium.

10. (previously presented) A mechanical shock-producing device according to Claim 2 wherein said beam comprises an I-beam configuration.

11. (previously presented) A mechanical shock-producing device according to Claim 2 wherein said top cap and said bottom cap comprise a metal.

12. (previously presented) A method for releasing a beam of a mechanical force testing apparatus, said method comprising:

selecting a shock column with a buckling failure point, the buckling failure point being at a pressure;

inserting the shock column between a beam rigidly mounted at least at one end and a pressure producing device; and

applying a pressure through the shock column to bend the beam to a desired point, the pressure needed to bend the beam to the desired point being equal to the buckling failure point pressure of the shock column.

13. (previously presented) A method according to Claim 12 wherein selecting a shock column with a buckling failure point comprises selecting the shock column with a notch formed near a center of the length of the shock column, the notch sized to provide the buckling failure at a pressure equal to the pressure needed to bend the beam to the desired point.

14. (previously presented) A method according to Claim 12 wherein selecting a shock column with a buckling failure point comprises selecting the shock column with a reduced cross-section formed near a center of the length of the shock column, the reduced cross-section sized to provide the buckling failure at a pressure equal to the pressure needed to bend the beam to the desired point.

15. (previously presented) A method according to Claim 12 wherein selecting a shock column with a buckling failure point comprises selecting the shock column with an enlarged cross-section extending between end portions of the shock column, the end portions and enlarged cross-section forming notches where the end portions extend into a top cap and a bottom cap, said enlarged cross-section sized to provide the buckling failure at a pressure equal to the pressure needed to bend the beam to the desired point.

16. (currently amended) A shock column for a mechanical testing device comprising:

a top cap;

a bottom cap; and

a column portion extending between said top cap and said bottom cap, said column portion comprising a buckling failure formed therein, said buckling failure configured to cause said column configured to buckle when a specific pressure is applied between said top cap and said bottom cap.

17. (currently amended) A shock column according to Claim 16 wherein said ~~column~~ portion buckling failure comprises a notch formed near a center of the length of said column portion, said notch sized to cause said column portion to buckle at a specific pressure.

18. (currently amended) A shock column according to Claim 16 wherein said ~~column~~ portion buckling failure comprises a reduced cross-section formed near a center of the length of said column portion, said reduced cross-section sized to cause said column portion to buckle at a specific pressure.

19. (currently amended) A shock column according to Claim 16 wherein said ~~column~~ portion buckling failure comprises:

end portions; and

an enlarged cross-section extending between said end portions, said end portions and said enlarged cross-section forming notches where said end portions extend into said top cap and said bottom cap, said enlarged cross-section sized to cause said column portion to buckle at a specific pressure.

20. (original) A shock column according to Claim 16 wherein said top cap, said bottom cap, and said column portion comprise threaded end portions, said top cap and said bottom cap threading onto said threaded portion of said column portion.

21. (original) A shock column according to Claim 16 wherein said top cap and said bottom cap comprise deformable ridges within a recess therein, said deformable ridges utilized in press fitting said top cap and said bottom cap to said column portion.

22. (previously presented) A mechanical shock producing device for testing a specimen comprising:

a beam having a first end and a second end, and capable of flexing, said beam rigidly mounted at said first end and said second end;

a fastener for mounting the specimen atop said on said beam proximate the center thereof;

a shock column comprising a top cap, a bottom cap, and a column portion extending therebetween, and positioned such that said top cap bears against said beam, said column portion comprising a feature which causes said column portion configured to buckle at a specified pressure; and

a hydraulic ram positioned to produce an upwardly directed force on said bottom cap of said column to cause said beam to bend to a position where the pressure is sufficient to cause said column portion to buckle, the buckling causing removal of the upwardly directed force

thereby allowing said beam to suddenly unbend and apply a g force return to an unbent position thereby applying a mechanical force to the specimen.

23. (previously presented) A high-g shock producing device according to Claim 23 wherein said top cap bears against is positioned near an approximate center of said beam.

24. (original) A high-g shock producing device according to Claim 23 wherein said beam comprises an I- beam.

25. (original) A mechanical shock-producing device according to Claim 1 wherein the specific force applied to said beam to initiate said buckling failure is equal to a force needed to bend said beam an amount to result in application of the desired mechanical force to the specimen.